

**POLYMERIC MEMBRANE ELECTROCHEMICAL CELL
OPERATING AT TEMPERATURES ABOVE 100°C**

ABSTRACT

The invention concerns a proton exchange membrane comprising a perfluorosulfonic acid having silica particles embedded therein in a concentration by weight comprised between 0.01 and 50% by weight and dimensions comprised between 0.001 and 10 micrometers, characterized in that said membrane comprises both an amorphous and a crystalline phase and the ratio thereof is adjusted by means of a controlled thermal treatment at a temperature higher than the glass transition temperature, controlled by an X-ray spectrometer. The invention further concerns an electrochemical cell using said membrane, in particular a fuel cell and the method of operating the same.

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